

Interactive comment on “Heuristic Estimation of Low-Level Cloud Fraction over the Globe Based on a Decoupling Parameterization” by Sungsu Park and Jihoon Shin

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In the present work, Park and Shin propose new proxies for the analysis of variations in low-level cloud fraction, motivated by the previously developed and widely used metrics of lower tropospheric stability (LTS) and estimated inversion strength (EIS). Their proxies, including two so-called low cloud suppression parameters (LCS) and estimated low cloud fraction (ELF), are related to inversion height and the lifting condensation level of surface air. Remarkably, these parameters explain most of the combined spatial-seasonal-interannual variability of low-level cloud fraction over both land and ocean globally, which is much larger than the fraction of variability explained by either LTS or

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EIS. It is also quite fascinating that in the framework developed by the authors, EIS is found to be more related to decoupling strength than it is to inversion strength. The results will surely be of interest to the community of researchers studying low clouds. This is especially true since the proxies the authors develop have firm theoretical underpinnings, high relative skill, and general applicability to multiple regions and surface types.

I have reviewed the paper before for another journal, and the authors have addressed all of my previous comments. The paper can be published almost as is, though there are two important typos that need to be corrected first. In the Abstract and Implication section, I am certain that the authors mean to write “(or LCS)” after “ELF”, instead of “(or LTS)”.

-Tim Myers

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